

CLAIMS

- 1) Porous bodies which are soluble or dispersible in non-aqueous media comprising a three dimensional open-cell lattice containing
- 5 (a) 10 to 70% by weight of a polymeric material which is soluble in water immiscible non-aqueous media and
- (b) 30 to 90% by weight of a surfactant,
- said porous bodies having an intrusion volume as measured by mercury porosimetry of at least about 3 ml/g
- 10 2) Porous bodies as claimed in claim 1 wherein the bodies are in the form of powders, beads or moulded bodies
- 3) Porous bodies as claimed in claim 1 or claim 2 wherein the polymeric material is a homopolymer or copolymer made from one or more of the following (co)monomers:-
- 15 Alkenes; dienes; urethanes; vinyl esters; styrenics; alkyl (meth)acrylates; alkyl (meth)acrylamides; (meth)acrylonitrile; vinyl ethers; imides; amides; anhydrides, esters; ethers, carbonates; isothiocyanates; silanes; siloxanes; sulphones; aliphatic and aromatic alcohols; aromatic and aliphatic acids; aromatic and aliphatic amines
- 20 4) Porous bodies as claimed in claim 3 wherein the polymeric material is polystyrene or polyvinyl acetate
- 5) Porous bodies as claimed in any preceding claim wherein the porous polymeric bodies have
- 25 water soluble and/or water insoluble materials incorporated into the polymeric lattice
- 6) Porous bodies as claimed in claim 5 wherein the water soluble material is selected from water soluble vitamins; water soluble fluorescers; activated aluminium chlorohydrate; transition metal complexes used as bleaching catalysts; water soluble polymers; diethylenetriaminepentaacetic acid
- 30 (DTPA); primary and secondary alcohol sulphates containing greater than C8 chain length or mixtures thereof
- 7) Porous bodies as claimed in claim 5 wherein the water insoluble material is selected from antimicrobial agents; antidandruff agent; skin lightening agents; fluorescing agents; antifoams; hair
- 35 conditioning agents; fabric conditioning agents; skin conditioning agents; dyes; UV protecting

agents; bleach or bleach precursors; antioxidants; insecticides; pesticides; herbicides; perfumes or precursors thereto; flavourings or precursors thereto; pharmaceutically active materials; hydrophobic polymeric materials and mixtures thereof.

- 5 8) A method for preparing porous bodies which are soluble or dispersible in non-aqueous media comprising a three dimensional open-cell lattice containing
(a) 10 to 70% by weight of a polymeric material which is soluble in water immiscible non-aqueous media and
(b) 30 to 90% by weight of a surfactant,
10 said porous bodies having an intrusion volume as measured by mercury porosimetry (as hereinafter described) of at least about 3 ml/g
comprising the steps of:
a) providing an intimate mixture of the polymeric material and the surfactant in a liquid medium
b)
15 providing a fluid freezing medium at a temperature effective for rapidly freezing the liquid medium;
c) cooling the liquid medium with the fluid freezing medium at a temperature below the freezing point of the liquid medium for a period effective to rapidly freeze the liquid medium; and
d) freeze-drying the frozen liquid medium to form the porous bodies by removal of the
20 liquid medium by sublimation.
- 9) A method as claimed in claim 8 wherein the cooling of the liquid medium is accomplished by spraying an atomised water-in-oil emulsion into the fluid freezing medium; by dropping drops of a water-in-oil emulsion into the fluid freezing medium or by pouring a water-in-oil emulsion into a
25 mould and cooling the emulsion in the mould.
- 10) A method as claimed in claim 8 or 9 wherein the polymeric material is a homopolymer or copolymer made from one or more of the following (co)monomers:-
Alkenes; dienes; urethanes; vinyl esters; styrenics; alkyl (meth)acrylates; alkyl (meth)acrylamides;
30 (meth)acrylonitrile; vinyl ethers; imides; amides; anhydrides, esters; ethers, carbonates; isothiocyanates; silanes; siloxanes; sulphones; aliphatic and aromatic alcohols; aromatic and aliphatic acids; aromatic and aliphatic amines
- 11) A method as claimed in claim 10 wherein the polymeric material is polystyrene or polyvinyl
35 acetate

12) A method as claimed in any one of claims 9 to 11 wherein the surfactant is non-ionic, anionic, cationic, or zwitterionic

13) A method as claimed in any one of claims 9 to 12 wherein the surfactant is solid at ambient
5 temperature

14) A method as claimed in any one of claim 9 to 13 wherein the surfactant has an HLB value of 3 to 6

10 15) A method as claimed in any one of claims 9 to 14 wherein the surfactant is selected from ethoxylated triglycerides; fatty alcohol ethoxylates; alkylphenol ethoxylates; fatty acid ethoxylates; fatty amide ethoxylates; fatty amine ethoxylates; sorbitan alkanoates; ethylated sorbitan alkanoates; alkyl ethoxylates; pluronics; alkyl polyglucosides; stearyl ethoxylates; alkyl polyglycosides; alkylether sulfates; alkylether carboxylates; alkylbenzene sulfonates; alkylether phosphates; dialkyl
15 sulfosuccinates; alkyl sulfonates; soaps; alkyl sulfates; alkyl carboxylates; alkyl phosphates; paraffin sulfonates; secondary n-alkane sulfonates; alpha-olefin sulfonates; isethionate sulfonates; fatty amine salts; fatty diamine salts; quaternary ammonium compounds; phosphonium surfactants; sulfonium surfactants; sulfonxonium surfactants; N-alkyl derivatives of amino acids (such as glycine, betaine, aminopropionic acid); imidazoline surfactants; amine oxides; amidobetaines; and mixtures
20 thereof

16) A method as claimed in claim 9 wherein the intimate mixture is a water-in-oil emulsion

17) A method as claimed in claim 16 wherein the discontinuous phase of the emulsion comprises
25 10 to 95% by volume of the emulsion

18) A method as claimed in claim 16 wherein the discontinuous phase of the emulsion comprises 20 to 60% by volume of the emulsion

30 19) A method as claimed in claim 16 wherein the discontinuous phase of the emulsion is selected from alkanes; cyclic hydrocarbons; halogenated alkanes; esters; ketones; ethers; volatile cyclic silicones and mixtures thereof

20) Solutions or dispersions comprising a polymeric material and surfactant formed by exposing the
35 porous bodies of any one of claims 1 to 7 to a non-aqueous medium.

21) Solutions or dispersions comprising a polymeric material, surfactant and a hydrophilic material formed by exposing the porous bodies of claim 5 having the hydrophilic material contained therein to a non-aqueous medium.